

# Unit 5

## Green Skills

### INTRODUCTION

Today, we are experiencing unpredictable weather conditions due to climatic changes and environmental deterioration. Deterioration of the environment through depletion of resources, such as air, water and soil is taking place globally. Whether we work in a factory or in field, we need to be aware of the factors and systems that can be harmful to the environment. We must adopt practices that are environment friendly and avoid using processes that will harm our surroundings. For example, pollution is a major problem in most cities. We can check the rising pollution levels only if we are aware of the various ways of controlling and minimising it. We can plant trees near our houses, and use an eco-friendly mode of transport, such as bicycle, electric car, etc. We can take care of our environment in many ways. For example, we must not leave the tap running while brushing our teeth, use the leftover water in our bottles for watering plants, use cloth bags instead of plastic bags, buy eco-friendly products and reduce the usage of paper.

### **Using non-toxic and natural products for cleaning and washing**

Cleaning products with sustainably sourced ingredients and natural oils that are biodegradable and available in eco-friendly packaging are conducive for the environment.



## Using plants inside home and other places for air purification

Plants, such as Areca palm and rubber absorb harmful pollutants from the air.

### SESSION 1: GREEN JOBS

A way we can contribute to the environment is by encouraging green jobs. Green jobs help protect and restore the environment. Green jobs could be in any sector or industry — traditional sectors, such as manufacturing and construction, and new sectors, such as renewable energy.

A green job is defined as one that helps bring about and maintain transition to environmentally sustainable forms of production and consumption. It cuts across all sectors — energy, material, water conservation, waste management and pollution control.

According to the United Nations Environment Program (UNEP), green jobs or green collar jobs are works in agricultural, administrative, research and development, manufacturing and service activities that contribute substantially to preserving or restoring environmental quality. 'Environmental quality' is a set of properties and characteristics of the environment, either generalised or local, as they impinge on human beings and other organisms.

A green collar worker is one who is employed in the environmental sectors of the economy. Green collar workers include professionals, such as green building architects, environmental consultants, waste management or recycling managers, environmental or biological systems engineers, landscape architects, solar and wind energy engineers and installers, green vehicle engineers, organic farmers, environmental lawyers and business personnel dealing with green services or products. Green workers include electricians who install solar panels, plumbers who install solar water heaters, construction workers who build energy-efficient green buildings, technicians



and workers involved in establishing wind power farms, and those working for clean and renewable energy development.

At the enterprise level, green jobs can produce goods or provide services that benefit the environment, for example, green buildings or clean transportation. However, these green outputs (products and services) are not always based on green production processes and technologies. Therefore, green jobs can also be distinguished by their contribution to more environment friendly processes. For example, green jobs can reduce water consumption or improve recycling systems. India has adopted several measures for ensuring sustainability, renewable energy and energy efficiency in various sectors, for example, efforts are being made to reduce Carbon dioxide emission rates from vehicles in automotive sector, promoting use of non-fossil fuel (solar, hydro and wind) as energy sources for power generation in the power sector and enabling energy efficient technologies through the concept of green buildings in the construction sector.

The government, in association with private players, is also raising energy awareness, changing consumer behaviour, setting energy codes, and evolving energy efficiency design and technologies. To address the skilled workforce issues associated with sustainable development, the Ministry of Skill Development and Entrepreneurship has set up the 'Skill Council for Green Jobs'. It is working towards developing competencies of people in the domain of renewable energy, sustainable development and waste management.

Green jobs that exist over an array of occupational profiles of skills and educational backgrounds constitute entirely new type of jobs, but most build on traditional professions and occupations.

With the aim of providing a greener economy and creating environment friendly employment opportunities, the government is also providing impetus for green jobs as part of restructured growth strategies under its 'Make in India' campaign. 'Make in India' is designed to facilitate investment, ensure

India's first modern metropolitan rail transport system, Delhi Metro, not only has helped commuters in Delhi save on commuting time per day but has also become the first rail-based methodology to garner 90,000 voluntary carbon credits for improving energy efficiency. It has not only created jobs for engineers, drivers, station attendants, signal staff, ticketing, construction and maintenance workers but also resulted in greening existing occupations and creating new occupations.

faster innovation, enhance skill development, protect intellectual property and build best in class manufacturing structures.

### **Benefits of green jobs**

The greening of economy presents a major opportunity to start new businesses, develop new markets and lower energy costs. Green jobs that contribute to protecting the environment and reducing carbon footprint are becoming a key economic driver of the twenty-first century. Green jobs help:

- increase the efficiency of energy and raw material.
- reduce greenhouse gas emissions.
- control waste and pollution.
- protect and restore ecosystems.
- support adaptation to the effects of climate change.

### **Green jobs in agriculture**

Organic gardening and farming is the process by which we can grow plants and crops in an environment friendly way. It prevents toxic runoff as no synthetic pesticides are used. It prevents water pollution and soil contamination as no chemical is added to the soil. By using organic methods of gardening, one can prevent death of insects, birds, critters and other beneficial soil organisms. Organic fruits and vegetables are free from chemical residues of synthetic fertilisers, and hence, are good for our health.

Farmers' cooperatives are one of the most effective means of reducing the risk in agriculture and strengthening the livelihoods of small and marginal farmers. The process involves mobilising farmers into groups of 15–20 members at the village level (called Farmer Interest Groups or FIGs) and building their associations to an appropriate federating point, i.e., Farmer Producer Organisations (FPOs). FPOs are farmers' collectives



with membership consisting mainly of small or marginal farmers.

Some green jobs in the agriculture sector are in organic farming, integrated pest management, farm mechanisation and agriculture tourism. The *Krishi Vigyan Kendras* (KVKs) set up by the government, can be utilised to provide support activities like technology dissemination, training awareness to the local youth and farmers for collection, storage and reuse of agro-waste.



## Green jobs in transportation

Use of energy-efficient vehicles and alternate fuels like Compressed Natural Gas (CNG) can help minimise greenhouse gas emissions. The new biofuel Policy announced by the Government of India on 10 August 2018 focusses on initiatives for enhanced use of biomass so as to improve the availability of ethanol through starch and sugar-based feedstock, develop ethanol technologies and increase the production of biodiesel for blending. Biofuels produced directly or indirectly from organic material, including BioCNG, Bio-methanol, etc., can generate green jobs.

The Energy Efficiency Services Limited (EESL), under the Ministry of Power, has launched an 'electric vehicle programme', which aims towards offering a comprehensive solution to facilitate the adoption of disruptive technology in India. The EESL seeks to create market for electric vehicle, a technology poised to boost e-mobility in the country. These encompass road, rail, sea and air based vehicles that use electric drive and take electric charge from an external source, or hydrogen in case of fuel cell electric vehicle. Some electric vehicle technologies are hybridised with fossil fuel engines (for example, plug-in hybrid electric vehicles, or PHEVs), while others use only electric power via a battery (battery electric vehicles). The emergence of electric drives as an alternate to internal combustion engines has opened opportunities for new entrants in the automotive market. Skill training of entrepreneurs in handling and maintenance of e-rickshaws can create more green jobs in the transportation sector.





## Green jobs in water conservation

There are green jobs in water harvesting and conservation. Rooftop rainwater harvesting refers to the process where rainwater is collected in tanks to be used later. It can be installed in all houses and buildings. It can also help increase the water table. Cycle-run water pumps are being used instead of electricity-run pumps. These do not consume electricity and provide a way for people to exercise.

Some common green jobs in the agriculture sector are related to water quality testing, water conservation, water management, etc.

Using bamboo channels for drip irrigation is an eco-friendly way to irrigate the land. It uses water efficiently without any wastage. It is cheaper to build, and after 2–3 years when the bamboo rots, it can be added to the soil as manure.

## Green jobs in solar and wind energy



Solar and wind power plants provide clean energy. A Solar Photovoltaic Installer installs and maintains solar panels in homes, businesses or land. A solar lighting technician assembles, tests and repairs different types of solar photovoltaic home lighting system and streetlights. Some

common jobs in this sector are roofer, solar panel installation technician and field technician.

### Green news

India is one of the few countries where forest and tree cover has increased in recent years. The total forest and tree cover is 24 per cent of the country's geographical area.

## Green jobs in eco-tourism

Eco-tourism is intended to provide an experience to visitors to understand the importance of conserving resources, reducing waste, enhancing the natural environment and reducing pollution. This helps improve public image as the visitors feel good about being in an environment friendly place. Green jobs in eco-tourism include eco-tour guides and eco-tourism operators.

## **Green jobs in building and construction**

Houses and buildings are becoming environment friendly. They use sustainable building material, and follow eco-friendly construction processes and green operations. Green building design provides an integrated approach to utilisation of renewable and non-renewable resources. It is important that future green building programmes and projects are established with strategies to address skill issues, including appropriate training. Skill development has a strategic role to play in promoting the development of green buildings. It is essential that there are enough workers equipped with appropriate skills so as to ensure that green buildings are developed on a large scale. Areas for green jobs in this sector include construction, landscape, gardening, maintenance of green components, water management, etc.

### **Green news**

The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII), was founded in the year 2001. The IGBC offers services, which include developing new green building rating programmes, certification services and green building training programmes.

## **Green jobs in solid waste management**

Solid waste is defined as any discarded solid fraction, generated from domestic units, trade centres, commercial establishments, industries, agriculture, institutions, public services and mining activities.

The Ministry of Urban Development, Government of India, has classified solid waste in 14 categories based on the source of origin and type of waste, i.e., domestic, municipal, commercial, industrial, institutional, garbage, ash, street sweepings, dead animals, construction and demolition waste, bulky, hazardous and sewage waste.

Solid waste management system includes collection, segregation, transportation, processing and disposal of waste. Green jobs related to waste management are in areas like e-waste recycling, solid waste management, waste reduction, waste auditing, waste control, etc.

## **Green jobs in appropriate technology**

Appropriate technology is small-scale technology that is environment friendly and suited to local needs. Examples of appropriate technology are bike-powered or hand-powered water pumps, solar lamps in streetlights, solar buildings, etc. It is the simplest

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technology that can get a job done in an environment friendly manner with locally available resources. The green jobs in appropriate technology may include areas, such as biogas production, water treatment filtration, farm mechanisation, rainwater harvesting, sanitation, lighting, food production, refrigeration, etc.

### Practical Exercise

#### Activity

##### Group discussion

Green jobs

##### Material required

Pen, paper, etc.

##### Procedure

- Form groups, depending on the number of students present in a class.
- Every student will describe one green job that one would like to do. Each one of them will make a list and share it with the rest of the class.

### Check Your Progress

#### A. Multiple choice questions

Read carefully all questions given below and choose the correct option.

1. Rita's children fall sick very often. They have cold and cough every month. What should Rita do?
  - (a) Grow organic food in kitchen garden
  - (b) Use air purifiers with HEPA filters
  - (c) Keep them inside the house all the time
  - (d) Paint her house with non-VOC paint
2. Jaanvi's children have grown up. They have a lot of clothes that are too small for them now. What should Jaanvi do with these old clothes?
  - (a) Throw them in the trash can
  - (b) Burn them
  - (c) Keep using them even though they are too small
  - (d) Donate them or make bags out of them

#### B. Short answer question

1. Name any two green jobs in the following sectors.
  - (i) Construction
  - (ii) Renewable energy

### What Have You Learnt?

**After completing this Session, you will be able to:**

- identify green jobs in various industries and sectors.



## SESSION 2: IMPORTANCE OF GREEN JOBS

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You have learnt that jobs are understood as green when people working in these areas help reduce adverse environmental impacts, and help build environmentally, economically and socially sustainable enterprises and economies.

### Limiting greenhouse gas emissions

Some of the greenhouse gases are Carbon dioxide, methane, Nitrous oxide, ozone and chlorofluorocarbons (CFCs). These are emitted due to burning of fossil fuels, using vehicles and refrigerants, and carrying out agricultural activities, etc. These gases can trap heat from the earth and prevent it from escaping into outer space. This causes the earth to heat, leading to 'global warming'. To reduce the emission of greenhouse gases, people are working towards reducing the use of fossil fuels by finding less polluting energy sources, such as Compressed Natural Gas (CNG).

### Minimising waste and pollution

Instead of only thinking about how to recycle or reuse waste, we must work towards finding solutions on how to reduce the amount of waste produced. This will help in waste management.

In manufacturing plants and factories, managers try to find various ways to reduce the amount of waste produced at every step of the process. Here are some of the ways.

- **Reusing scrap material**

For example, in paper mills, damaged rolls are sent back to the beginning of the production line, i.e., they are added as raw material. In manufacture of plastic items, off-cuts and scrap are re-incorporated into new products.

- **Ensuring quality control**

If the quality of products is maintained, there will be a decrease in rejected products, thus, reducing waste. Automated monitoring equipment are now being used, which can help identify production problems at an early stage.

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- **Waste exchange**

This is where the waste product of one process becomes the raw material for another. It represents the way of reducing waste disposal through re-use.

- **Managing e-waste**

With advanced technology, we have also encountered problems in managing e-waste like old mobile phones, laptops and television sets. It is important to have sustainable development and plan judiciously for recycling e-waste.

- **Use of eco-friendly material**

Scientists have discovered various material, which are eco-friendly, for example, banana leaf and paper plates that are easily disposable, etc. These must be made easily available and their use needs to be encouraged.

### **Protecting and restoring ecosystems**

Ecosystem is the community of living and non-living beings existing together, and interacting with and supporting each other. It is the perfect balance where every species can survive. Human activities, such as excess felling of trees can lead to destruction of the ecosystem, causing climate change and natural disasters, making it difficult for living beings to survive.

People are working now to help conserve the existing ecosystems and restore the degraded ones, using natural solutions. Forests and vegetation help stabilise slopes, and therefore, reduce the risk of landslides. Wetlands can help control floods. Avoiding cutting of forests, planting more trees, investing in soil health and restoration can control the emission of greenhouse gases.

### **Adapting to the effects of climate change**

Climate will change based on the damage already done. Even though people are trying to control the emission of greenhouse gases, global warming will be there due

to the damage already done in terms of felling of trees and using land for agriculture, etc. So, we have to adapt to those changes. This means, we must find ways to survive in the new climatic conditions. For example, if there is weather forecast of less rain, farmers will need to grow crops that can survive in drought conditions.

The Government of India launched the National Action Plan on Climate Change (NAPCC) in June 2008 to deal with climate change and related issues. The NAPCC comprises eight missions in specific areas of solar energy, enhanced energy efficiency, habitat, water, sustaining Himalayan ecosystems, forestry, agriculture and strategic knowledge for climate change, which address issues relating to mitigation of greenhouse gases and adaptation to the adverse impacts of climate change on environment, forests, habitat, water resources and agriculture.

## Practical Exercise

### Activity 1

#### Poster making

#### Material required

Chart paper, colour pencils, pictures, etc.

#### Procedure

- Form groups depending on the number of children present in a class.
- Collect pictures of green jobs and make a poster. Organise an exhibition in the front gate of your school.

### Activity 2

#### Tree plantation

#### Material required

Seeds, soil, water, gloves, etc.

#### Procedure

- Identify an area where you can plant a sapling. Coordinate with your teacher for the kind of plant that can thrive at the selected location. For example, there are various plants that require less water. Now, plant a suitable seed or sapling. Name it if you want. Make sure that you water the plant regularly and take care of it.

## Check Your Progress

**A. Multiple choice questions**

Read carefully the questions given below and choose the correct option(s).

1. There is a garbage bin in your canteen and it, generally, gets filled beyond capacity every day. What should you do?
  - (i) Ask the canteen management to get a bigger bin
  - (ii) Suggest ways to reduce the amount of garbage collected
  - (iii) Throw garbage on the floor and walk away
  - (iv) Talk to your friends about the problem
  - (a) (i), (ii), (iii)
  - (b) (i), (ii)
  - (c) (i), (iii), (iv)
  - (d) (i), (iv)
2. In a steel factory, a lot of utensils are being made. The manager finds a number of defective pieces, which have to be discarded. How can the person minimise the waste?
  - (a) Give it to *kabaadiwala* or scrapdealer
  - (b) Dump it in a landfill site
  - (c) Send it back to the production line — to be melted
  - (d) Sell it in market

**B. Short answer questions**

1. List some ways by which we can reduce the amount of waste generated.
2. Explain the importance of green jobs in reducing the emission of greenhouse gases.

## What have you learnt?

**After completing this Session, you will be able to:**

- explain the role and importance of green jobs.